

SPATIAL LIGHT MODULATOR DRIVEN PHOTOCATHODE SOURCE

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ELECTRON BEAM PATTERN GENERATOR

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ABSTRACT OF THE DISCLOSURE

The present invention provides a source of multiple beams of electrons having a desired spatial pattern, as typically used for multiple beam lithography. A source of radiation, typically ultraviolet radiation, is directed onto a modulator and from the modulator onto a photocathode. The modulator, typically a spatial light modulator, imposes a spatial pattern onto the radiation. The pattern imposed onto the radiation is transmitted to the multiple beams of electrons as such beams are generated by the photocathode. An electron beam lithography system having higher throughput than conventional single beam systems is one result. Methods of creating multiple electron beams and methods of patterning targets with such multiple beams of electrons are also described. A micromirror array is a preferred modulator. Mercury arc lamp directing ultraviolet radiation by means of the modulator onto a cesium telluride photocathode is a preferred combination of radiation source and photocathode.